

The Lead and Copper Rule, Revisions, and Improvements

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Ohio EPA

Division of Drinking and Ground Waters

Agenda

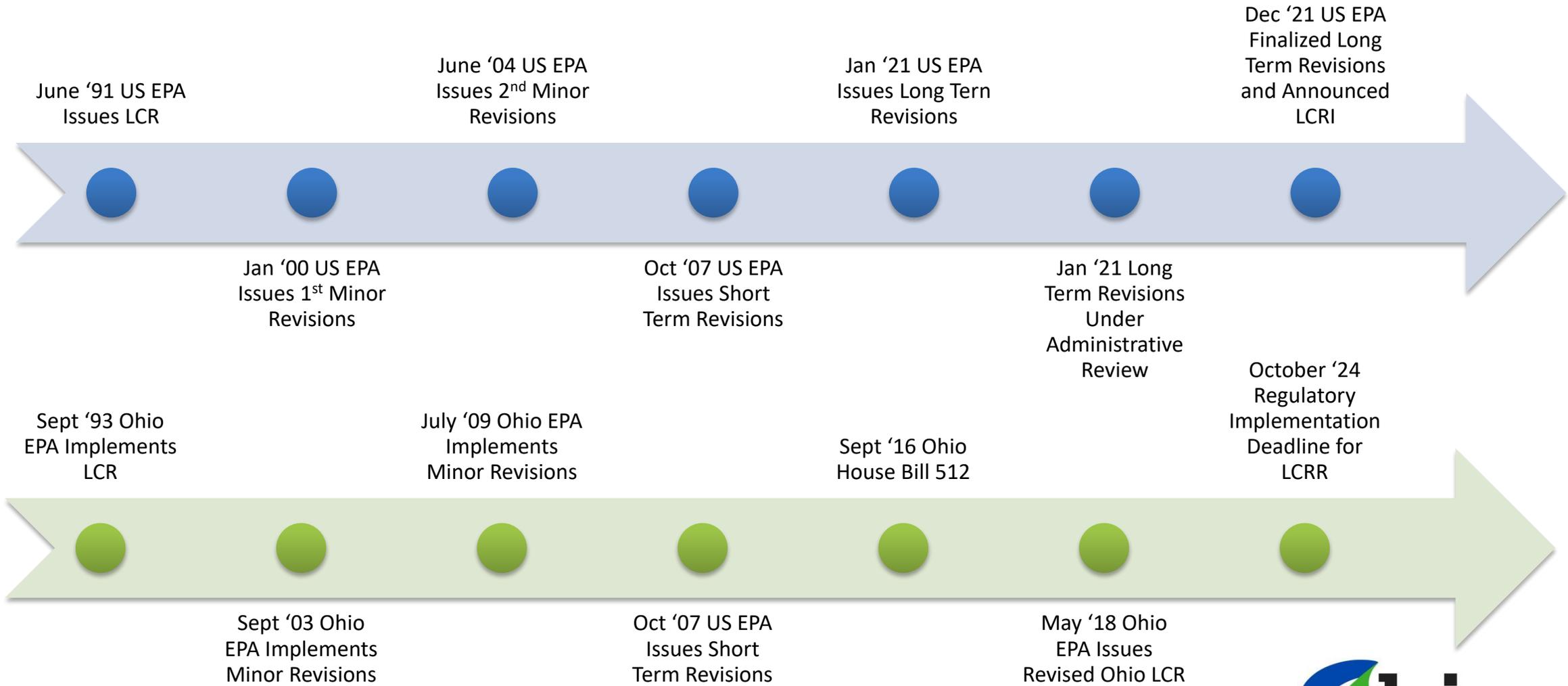
- 2023 LCR Monitoring
- History of the Lead and Copper Rule (LCR)
- Comparing the LCR, LCRR, and LCRI
- Maps
- Inventories
- Funding
- Final Thoughts

MONITORING FOR 2023

Lead and Copper Reduced Monitoring

- Ohio's LCR rule currently requires 6-month monitoring with options for annual and triennial reduced schedules with Director of Ohio EPA's approval
- Ohio EPA is currently evaluating reduced monitoring options
- **While future monitoring requirements are evaluated, the following determinations apply for 2023:**
 - PWSs currently on triennial can apply and remain on triennial monitoring if they continue to meet eligibility requirements
 - PWSs on annual monitoring in 2022 who applied for reduced triennial monitoring for 2022, will not be approved for reductions beyond annual
 - All lead and copper schedules are subject to revision in 2024

Lead and Copper Rule History



LCR/LCRR/LCRI

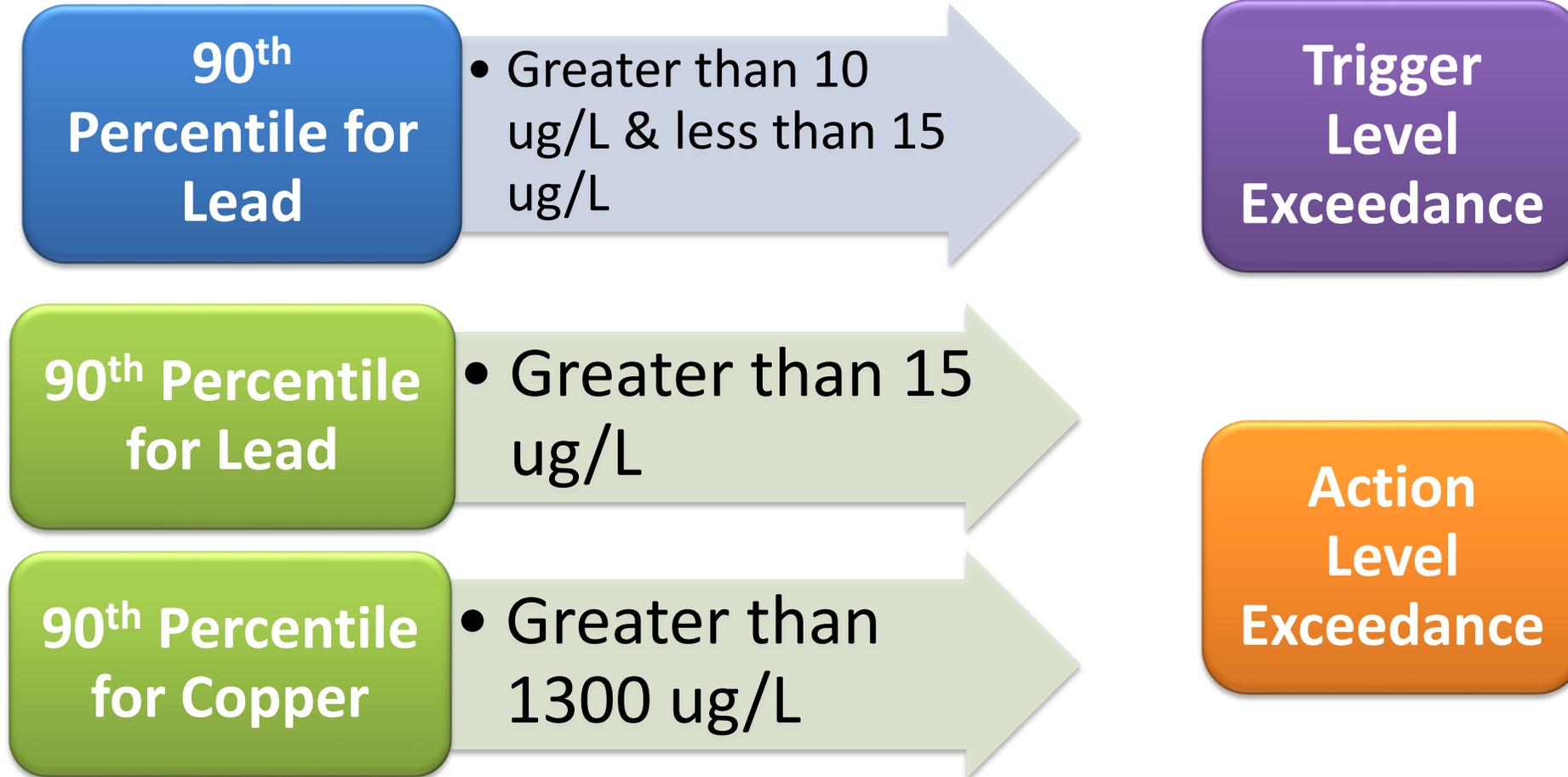
- **LCR**
 - Current state rule
 - Now the ‘old’ rule
- **LCRR**
 - Revision
 - Effective December 2021, Compliance Oct. 16, 2024
 - *Initial* inventories
- **LCRI**
 - Improvements to LCRR announced December 2021
 - LSLR
 - Action/Trigger levels
 - EJ/Underserved Communities
 - Compliance sampling
 - Draft expected Summer 2023 with promulgation prior to Oct. 2024

LCR PROGRAM REORGANIZATION

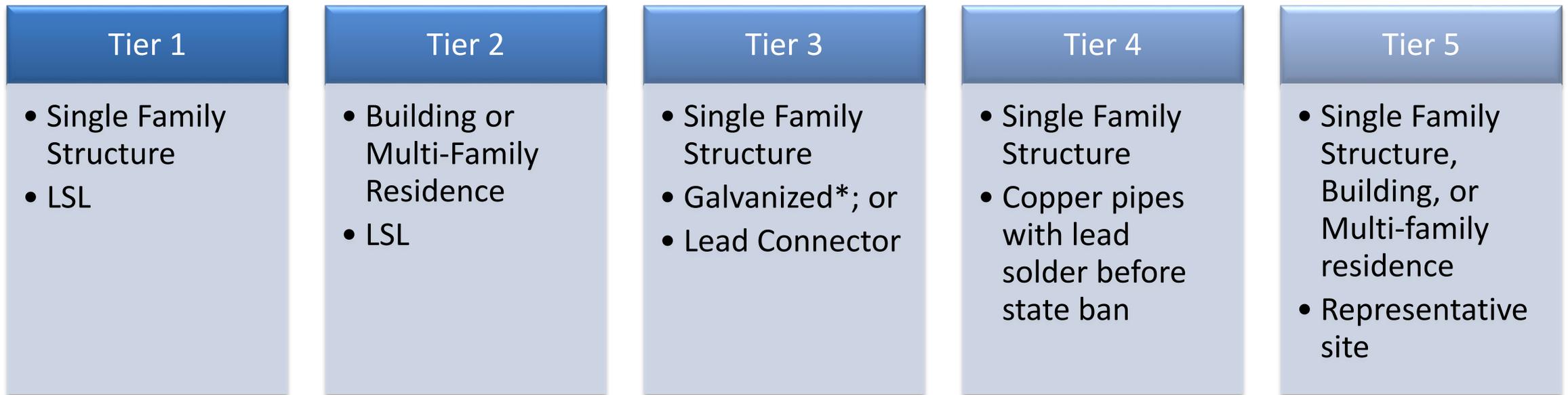
SOME ITEMS IN LCRR TO BE AWARE OF*

*SUBJECT TO CHANGE

LCRR – Trigger Level Exceedance



LCRR – Sample Site Tiering Structure



*Galvanized currently or previously downstream from a lead line

(Tiering structure for community water systems)

Compliance Sampling

EPA's new rule:

- 1. Targets water that's actually from the lead service lines, not just the faucet or premise plumbing
- 2. Targets where the highest levels of lead are to identify problems sooner
- 3. Leads to more lead service line replacements and improved treatment to reduce lead
- 4. Better protects public health



PREMISE PLUMBING
SERVICE LINE
WATER MAIN



Premise Plumbing:
Premise plumbing is located inside the house.



Lead Service Line: A lead service line is a pipe that runs from the water main to the home's internal plumbing.



Testing where the Lead is

For homes with lead service lines, the 5th liter of water must be tested for lead, not the 1st liter like the old rule.



WATER METER

MAIN WATERLINE

Mandatory LSL Replacements

Ohio EPA

- Triggered with ALE **after** installation of OCCT or source water treatment
- 7% of total LSLs
- Stop after two 6-month monitoring periods below action level

LCRR*

- Replacement plan required with LSL Inventory submission
- Triggered immediately
- **TLE:**
 - Goal % of total LSLs
 - Stop after two annual monitoring periods below trigger level
- **ALE:**
 - 3% of total LSLs
 - Stop after four 6-month monitoring periods below action level

*subject to change

LCRR - Lead Public Notification & Education

24 Hours
After the End of
the Monitoring
Period

- Provide **Tier 1**
Public Notice

60 Days
After the End of
the Monitoring
Period

- Provide Public
Education

(Additional notices are also required for a “trigger level exceedance”)

Additional Items

- Small (<10k) System Flexibilities
 - Instead of installation of CCT
 - Filters, plumbing replacement, LSL replacement
- “Re-Optimization” of CCT
 - Systems with OCCT installed who have a TLE or ALE
 - Consider ortho
 - Pipe loops not coupons
- Sampling at schools and daycares
 - 20% of Elementary and daycares in your service area
 - 3Ts testing completed by PWS
- “Find and Fix”

LEAD SERVICE LINE IDENTIFICATION

****NOT LIKELY TO CHANGE****

Are Lead Maps due in 2022?

Yes

Due: December 31, 2022

Content requirements unchanged from 2017

New No Lead Verification Form

Submission to Ohio EPA will count for ODH and ODJFS

Contact DDAGW CO-Zach Anderson if you have questions on maps

- We currently have 2 options to submit maps electronically
 - Email to DDAGW_Lead_Maps@epa.ohio.gov
 - Use liquid files drop box for files greater than 20 mb
 - https://fileshare.epa.ohio.gov/filedrop/DDAGW_Lead_Maps

Ohio Lead Maps Requirements 2024

- Expanded content and format requirements
- Developing state platform
- Expected to incorporate 2024 inventory information
- Ohio EPA will provide guidance for the map and inventory requirements and conduct outreach

Current Requirements - Lead Service Line Identification

Distribution System Materials Inventory

- One-time submittal (1990's)
- "Ongoing updates"

Ohio Lead Maps

- First submittal in March 2017
- Updates required every 5 years
- Must be submitted to ODH and ODJFS; available on Ohio EPA's website

Current Requirements - Lead Service Line Identification

Distribution System Materials Inventory

- One-time submittal (1990's)
- "Ongoing updates"

Ohio Lead Maps

- First submittal in March 2017
- ~~Updates required every 5 years (next submittal in March 2022)~~
- Update and resubmit the info required according to a schedule determined by the director but no less frequently than required under the Safe Drinking Water Act.
- Must be submitted to ODH and ODJFS; available on Ohio EPA's website

US EPA - Lead Service Line Identification

Lead Service Line Inventory

- First submittal due October 2024
- For **each service line** connected to the system, provide the material(s) for the public side and private side
- Annual or triennial updates of the inventory are required, based on the system's monitoring schedule
- Inventories must be made publicly available
- Water systems who do not have lead, galvanized, or unknown materials in their inventory must conduct the initial inventory; these systems do not have to complete regular updates, but will need to meet the public notification requirement by providing a narrative

Minimum 2024 Requirements Based on Federal Revisions and Current State Law

Identification of all Service Connections

1. Identification including a locational identifier (address or lat/long) for each service line in the system
2. Building Description Narrative
3. Regular Updates

Material for each “portion” of a service connection

- Private Side Material
- Public Side Material

Materials may include

- Lead**
- Galvanized** “requiring replacement” (i.e. downstream from lead now or previously)
- Lead Status Unknown**
- Non-Lead**

Non-Lead Materials

- Unknown – not lead
- Copper
- Plastic
- Cast Iron

US EPA Inventory Template

Detailed Inventory

PWS Name:
PWSID:
Date Last Updated:

Purpose of this worksheet: To provide a customizable format water systems can use to track materials for each service line in their distribution system.

General Instructions: Each row in this worksheet represents one service line connecting the water main to the customer's plumbing. The worksheet includes required and recommended elements; the columns with the aqua shading are required by the LCRR. Systems can customize by adding or deleting columns. Important notes for each column are in Row 12; also see the **Template Instructions** worksheet for detailed instructions. Note that users can freeze panes to enable them to see the headings and notes when entering data. The worksheet includes examples in rows 13 - 20 and is formatted for approximately 10,000 entries.

Location Information					System-Owned Portion								Customer-Owned Portion		
Unique Service Line ID	Location Identifier		Sensitive Population? (Yes/No)	Disadvantaged Neighborhood? (Yes/No)	System-Owned Portion Service Line Material Classification	If Non-Lead in Column G, Was Material Ever Previously Lead?	Service Line Installation Date	Service Line Size	Basis of Material Classification	Was the Service Line Material Field Verified?	If "Yes" Service Line Material Was Field Verified:		Notes	Customer-Owned Portion Service Line Material Classification	Service Line Installation Date
	Street Address	Other Location Identifier									Describe the Field Verification Method	Enter the Date of Field Verification			
A Unique ID is recommended for each service line.	<i>Water systems must track addresses of all service lines in their internal inventory. For the publicly accessible version, location identifiers are required for lead and galvanized requiring replacement. If the system does not use addresses for their location identifier, other options could include GPS coordinates, landmark, intersection, block, or other details to specify.</i>		Select Yes if sensitive subpopulation, e.g., day care, school, multifamily home. If Yes-Other, describe in the Notes field.	Does location meet state affordability guidelines or other measures?	Dropdown list includes recommended subclassifications. If "Non-Lead Other", describe in Notes field	Select Yes, No, or Don't know. Important for determining if downstream/ customer-owned galvanized service line requires replacement	Date, year, or estimated date range when the service line was installed or replaced	Diameter in inches	Select option from drop down list. If "Other," describe in the Notes field	Select Yes or No	Select option from drop down list. If "Other," describe in the Notes field	Enter approximate date of field verification or date that the record was updated	Can use this field for documenting additional relevant information, including when classification changes.	Dropdown list includes recommended subclassifications. If non-lead other, describe in Notes field.	Date, year, or estimated date range when the service line was installed or replaced
Example 1	1234 Test St., City, State, Zip Code	Intersection of Test and Elm St.	No	No	Non-Lead - Plastic	Yes	1997	2	Installation date after lead ban	Yes	Visual inspection at the meter pit	5/1/2019		Non-Lead - Plastic	2012
Example 2	4321 Test St., City, State, Zip Code													Galvanized	Fall 1980
Example 3	16 Capitol St., City,													Galvanized	1908

Table 1: Classification of Entire Service Line When Ownership is Split

System-Owned Portion	Customer-Owned Portion	Classification for Entire Service Line
Lead	Lead	Lead
Lead	Galvanized Requiring Replacement	Lead
Lead	Non-lead	Lead
Lead	Lead Status Unknown	Lead
Non-lead	Lead	Lead
Non-lead and never previously lead	Non-lead, specifically galvanized pipe material	Non-lead
Non-lead	Non-lead, material other than galvanized	Non-lead

Minimum Lead Service Line Inventory Data

For each service line served by the system, no matter the material or ownership status, water systems are asked to provide the following information. This table outlines the draft information to be included in the LSL inventory and LSL inventory reporting requirements are subject to change.

Information	Required or Optional?	Data to be collected
System Site Identification Number	Optional	<i>e.g., 101-5669, 123 Ohio Ave, etc.</i>
LCR Sample Monitoring Point (SMP) ID	Required	LCRXXX Not an LCR SMP
Locational Identifier	Required	Address Latitude/Longitude
Is service line metered?	Required	Yes No Unknown
Service Line Use	Required	Drinking Non-Drinking Combination (Drinking and Non-Drinking)
Lead gooseneck/pigtail currently present?	Required	Yes No Unknown
Was a lead gooseneck/pigtail previously connected to this service line?	Required	Yes No Unknown
Current Utility Side SL Material	Required	Lead Copper Galvanized Plastic Ductile Iron Lined Cast Iron Unlined Cast Iron Unknown - May be Lead Unknown - No Lead Other – please describe
Utility Side SL Verification Method	Required	Records Only Field Inspection Only Records Validation

		No Unknown
Utility Service Line Diameter	Optional	<i>e.g., 1 inch</i>
Utility Side Installation/Replacement Date	Optional	<i>e.g., 1974</i>
Current Customer SL Material	Required	Lead Copper Galvanized Plastic Ductile Iron Lined Cast Iron Unlined Cast Iron Unknown – May be Lead Unknown – No Lead
Customer Side Verification Method	Required	Records Only Field Inspection Only Records Validation Records Invalidation Statistical Analysis Other – please describe Records Only
Customer Side Installation/Replacement Date	Optional	<i>e.g., 1974</i>
Building Type	Optional	Single Family Structure Multi-Family Residential Elementary School Secondary School Childcare Center Nonresidential Other
Building Construction Date	Optional	<i>e.g., 1974</i>
Building Plumbing Material 1	Optional	Lead Internal Plumbing Copper with Lead Solder Copper withOUT Lead Solder Other – No Lead
Building Plumbing Material 2	Optional	Lead Internal Plumbing Copper with Lead Solder Copper withOUT Lead Solder Other – No Lead
Point of Entry (POE) or Point of Use (POU) Treatment	Required	Yes No Unknown

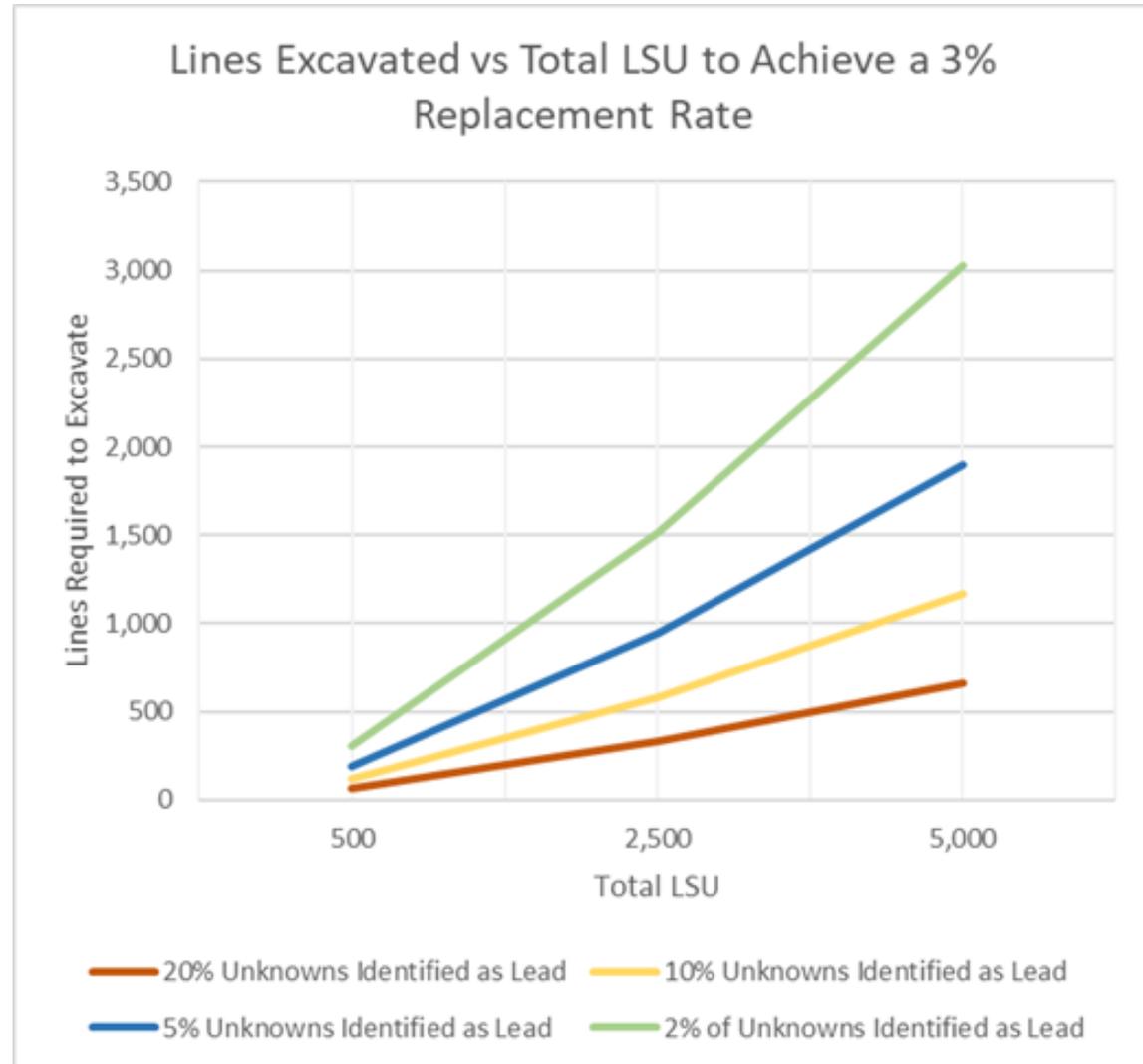
Entire Service line

Exhibit 2-3: Classifying Service Line Materials When Ownership is Split According to the LCRR 40 CFR §141.84(a)(4)

System-Owned Portion	Customer-Owned Portion	Classification for Entire Service Line
Lead	Lead	Lead
Lead	Galvanized Requiring Replacement	Lead
Lead	Non-lead	Lead
Lead	Lead Status Unknown	Lead
Non-lead	Lead	Lead
Non-lead and never previously lead	Non-lead, specifically galvanized pipe material	Non-lead
Non-lead	Non-lead, material other than galvanized	Non-lead
Non-lead	Lead Status Unknown	Lead Status Unknown
Non-lead, but system is unable to demonstrate it was not previously Lead	Galvanized Requiring Replacement	Galvanized Requiring Replacement
Lead Status Unknown	Lead	Lead
Lead Status Unknown	Galvanized Requiring Replacement	Galvanized Requiring Replacement
Lead Status Unknown	Non-lead	Lead Status Unknown
Lead Status Unknown	Lead Status Unknown	Lead Status Unknown

Cost of the Unknown

Lead Service Line Replacement				
	PWS A	PWS B	PWS C	
Total Lines	10000	10000	10000	
LSL and GRR	0	475	45	
Non-lead	2000	2000	8500	
Lead status unknown (LSU)	8000	7525	1455	
3% Replacement in Year 1				
Total LSL, GRR, and LSU	8000	8000	1500	
Number of Lines to Replace	240	240	45	
20% Success Rate	Lines Excavated	1054	0	0
	Total Lines Replaced	211	240	45
10% Success Rate	Lines Excavated	1865	0	0
	Total Lines Replaced	186	240	45
5% Success Rate	Lines Excavated	3030	0	0
	Total Lines Replaced	152	240	45
3% Replacement in Year 2 (Assuming 10% Success in Year 1)				
Total LSL, GRR, and LSU	6135	7760	1455	
Number of Lines to Replace	184	233	44	
LSL and GRR Remaining	0	235	0	
10% Success Rate	Lines Excavated	1430	0	339
	Total Lines Replaced	143	233	34
5% Success Rate	Lines Excavated	2324	0	551
	Total Lines Replaced	116	233	28
2% Success Rate	Lines Excavated	3718	0	882
	Total Lines Replaced	74	233	18



LSL Replacement Plans*

- All water systems with one or more lead, galvanized requiring replacement, or lead status unknown service lines in their distribution system must, submit a lead service line replacement plan
- The plan must include a description of:
 1. A strategy for determining the composition of lead status unknown service lines;
 2. A procedure for conducting full lead service line replacement;
 3. A strategy for informing customers before a full or partial lead service line replacement;
 4. For systems that serve more than 10,000 persons, a lead service line replacement goal rate recommended by the system in the event of a lead trigger level exceedance;
 5. A procedure for customers to flush service lines and premise plumbing of particulate lead;
 6. A lead service line replacement prioritization strategy; and
 7. A funding strategy for conducting lead service line replacements which considers ways to accommodate customers that are unable to pay to replace the portion they own.

*subject to change

Identification Methods

Received: 5 February 2021 | Revised: 8 April 2021 | Accepted: 23 April 2021

DOI: 10.1002/aws2.1226

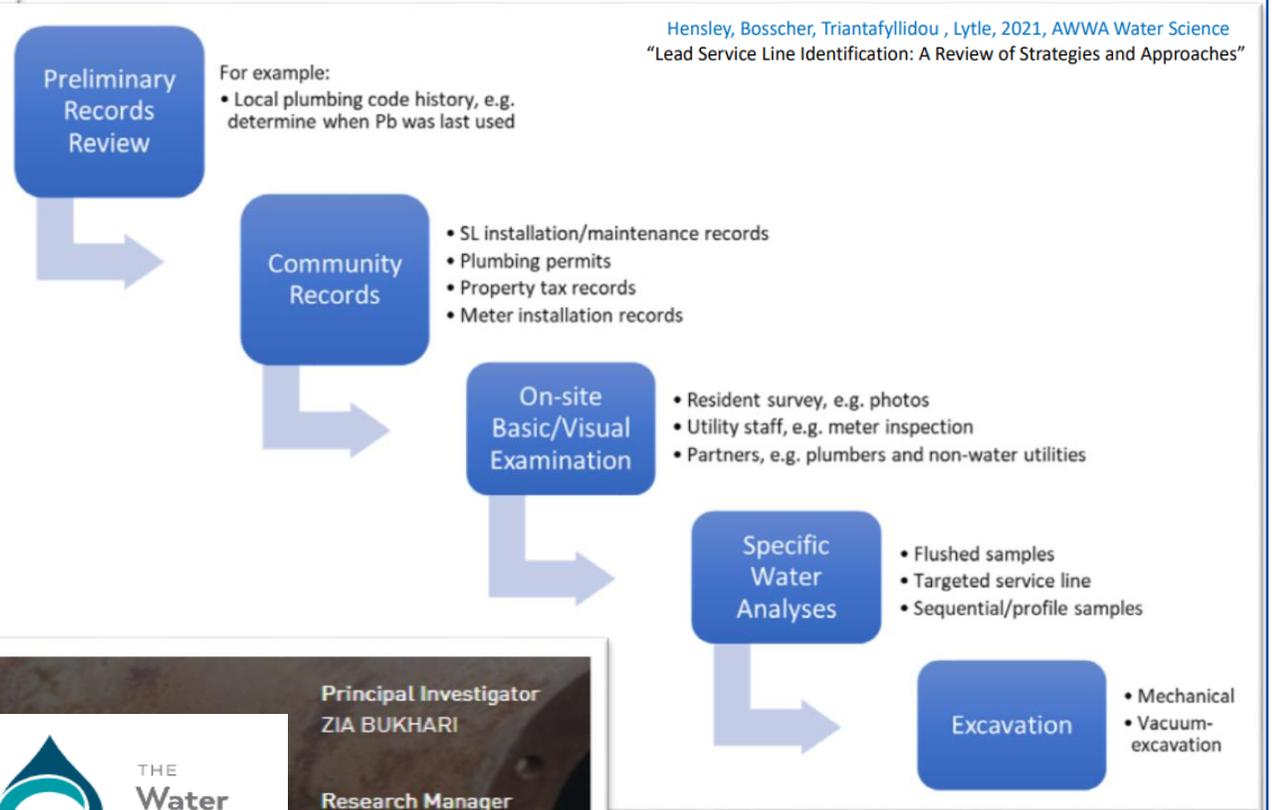
REVIEW ARTICLE



Lead service line identification: A review of strategies and approaches

Kelsey Hensley¹ | Valerie Bosscher² | Simoni Triantafyllidou³ | Darren A. Lytle³

Hensley, Bosscher, Triantafyllidou, Lytle, 2021, AWWA Water Science "Lead Service Line Identification: A Review of Strategies and Approaches"



Project #4693

Lead Service Line Identification Techniques



Principal Investigator
ZIA BUKHARI

Research Manager
MR. JONATHAN CUPPETT

Contractor
AMERICAN WATER





Records

Investigations of Water Works Protection in Ohio

By W. H. Knox

PRIOR to December 7, 1941, the Ohio State Dept. of Health had already planned and under way an investigation of important water works systems which were being taken and which were a part of the protection of public water supply. This program was postponed and every portion of his time on investigation had been made of the larger villages in the State.

Rather than outlining the author proposes to discuss in the surveys undertaken. The most important was that, except for special war measures such as lighting, the precautionary measures required are only those which should be practiced at all times in any well operated water works system.

The conditions found varied widely. In a few instances it appeared that city officials had become unduly alarmed and the guards, lighting and other precautionary structures were not maintained.

Importance of Records

The outstanding defect noted was the appalling lack of records in a large number of municipalities. This is a feature of water works which has not ordinarily been investigated by members of the department.

A paper presented on May 14, 1942, at the Ohio Section Meeting
W. H. Knox, Asst. Engr., State Dept. of Health, Columbus, Ohio.

- Assessment of water works records 80 years ago

You can get a good look at a water service line by digging it up, but wouldn't you rather take the operator's word for it?



...t rely on
...ing reliable

... neglected the subject for years. It is the duty of a water works department to have a permanent and accurate record of connections in the distribution system. In most of these instances occurred in the hands of the water works superintendent, the director of the department, or where there had been no records. The best records observed by the State Dept. of Health were those of the private water companies and those of the public water companies where maintenance of

Identification Methods

LSL ID Method	Utility Cost			Disturbance		Impact to Homeowner			Utility Skills Required		Overall	
	Financial	Onsite time	Pre-/Post-time	Service line	Traffic flow	Water service disruption	Property damage	Homeowner involvement (includes pre-/post-time)	Technical interpretation	Labor	Time	Accuracy
Community Records Review	L or M (if digitized)	NA	M to H (L if digitized)	None	None	None	None	None	L to M	None	M	L to H
Basic/Visual Observations (on private-side)	L	L	L to M	None	None	None	None	L	L	L	L	M to H
Water Quality Sampling-Flushed	L	L	M to H	None	None	None	None	L	M	L	M	L to M
Water Quality Sampling-Sequential	M	L	M to H	None	None	M	None	M to H	M	L to M	M	L to H
Water Quality Sampling-Targeted	L	L	M to H	None	None	M	None	M to H	M	L to M	M	M
Excavation-Mechanical	H	H	M to H	H	M to H	H	H	L	L to M	H	H	H
Excavation-Vacuum	M to H	L to M	M to H	M	L to M	M to H	M to H	L	M	M to H	M	M to H

Hensley, Bosscher, Triantafyllidou, Lytle, 2021, AWWA Water Science
 “Lead Service Line Identification: A Review of Strategies and Approaches”

Ohio EPA / Divisions & Offices / Drinking & Ground Waters / Public Water Systems / Financial Assistance

Drinking & Ground Waters

Welcome

Announcements

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Certified Operators

Guides & Manuals

Engineering and Plan Approval

Public Water Systems

Source Water Protection and Underground Injection Control (UIC)

Reports & Data

Regulations



Financial Assistance

News

Lead Service Line Inventory and Mapping Grant

Drinking Water Assistance Fund

Planning

Drinking Water Emergency Loan Fund

Asset Management

Resources

Beginning March 28, 2022, Ohio EPA is offering up to a \$50,000 grant to public water systems for lead service line identification, mapping, and replacement planning efforts. Community and Non-transient non-community public water systems will be able to apply for the reimbursement grant through Ohio EPA. This grant is possible through the H2Ohio initiative which was launched by Governor Mike DeWine in 2019. Up to \$1.4 million in H2Ohio funds are available for this effort. To learn more about H2Ohio, visit h2.ohio.gov.

Eligible Activities



Grant Application Process



Application Documents and Guidance



Questions?



Resources



H2Ohio

Addressing Lead Service Lines

Round 3

Identify and Map LSLs

\$500,000 for Ohio Rural Community Assistance Program (RCAP)

\$100,000 for Ohio Rural Water Association (ORWA)

\$2.1 million for Ohio EPA's Lead Service Line Mapping and Inventory
Mini Grants (up to \$50K)



Remove LSLs

\$2 million to 6 communities to remove and replace lead service lines

Round 4

\$1.5 million for Ohio EPA's Lead Service Line Mapping and Inventory
Mini Grants (up to \$50K)

Mini-Grant Eligible Activities

- Identification and/or verification of lead service line material
 - Can include potholing/hydrovacating/trenching
 - Homeowner survey and outreach
 - Private side work
- Development of service line inventory and integrating inventory information into GIS and Asset Mgt Plans
- Hiring a third-party consultant(s)
- Purchasing tools or technology required for identification, inventory, or mapping purposes.
 - Computer hardware or software

707 days...

- Focus on compliance with **current rules**
 - Follow your monitoring schedule
 - Issue Consumer Notice
 - Ensure you're complying with LSL replacement requirements
 - (Re)Evaluate CCT
- Identify unknown service lines and prepare for 2024 LSL Inventory
 - Document everything
- Take an active part in providing feedback while preparing for the LCRR
 - Planning to form Stakeholder groups



Guidelines for Water Line Repairs and Replacements in Areas with Lead Service Lines

PWS-06-001

Division of Drinking and Ground Waters
Issued: November 1, 2018



**SAMPLE
SMART!**

**SAMPLE
EARLY!**



THANK YOU

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